We claim:

1. A process for producing light olefins, the process comprising the steps of:

(a) contacting an oxygenate with a molecular sieve catalyst composition in a fluidized reactor under first conditions effective to convert the oxygenate to the light olefins;

(b) directing the molecular sieve catalyst composition and the light olefins to a disengaging zone;

(c) yielding the light olefins from the disengaging zone;

(d) directing the molecular sieve catalyst composition from the disengaging zone to a standpipe;

(e) fluidizing the molecular sieve catalyst composition in the standpipe with a fluidizing medium, wherein the fluidizing medium is selected from one or more of methanol, dimethyl ether, C4+ olefins, C4+ hydrocarbons, acetaldehyde, acetone, butanone, acetic acid, one or more byproducts formed in step (a), or a mixture thereof; and

(f) transporting the molecular sieve catalyst composition in a fluidized manner from the standpipe back to the fluidized reactor.

2. The process of claim 1, wherein the fluidizing medium is selected from one or more of methanol, dimethyl ether, C4+ olefins, C4+ hydrocarbons, acetaldehyde, acetone, butanone, acetic acid, or a mixture thereof.

3. The process of claim 1, wherein the fluidizing medium comprises one or more byproducts formed in step (a).

4. The process of claim 3, wherein the process further comprises the steps of:

(g) separating the one or more byproducts from the light olefins; and

(h) directing the one or more byproducts to the standpipe.

5. The process of claim 1, wherein step (e) creates a superficial gas velocity in an upward direction.

6. The process of claim 5, wherein the molecular sieve catalyst composition is transported in a downward direction while in the standpipe.

7. The process of claim 5, wherein the superficial gas velocity is from about 0.1 to about 1.0 meters/second.

8. The process of claim 7, wherein the superficial gas velocity is from about 0.2 to about 0.8 meters/second.

9. The process of claim 1, wherein the fluidizing medium contacts the molecular sieve catalyst composition in one or both of steps (e) and (f) under second conditions effective to convert at least a portion of the fluidizing medium to additional light olefins.

10. The process of claim 9, wherein the second conditions comprise a temperature of from about 350°C to about 1000°C and a superficial gas velocity in an upward direction of from about 0.1 to about 1.0 m/s.

11. The process of claim 10, wherein the second conditions comprise a temperature of from about 400°C to about 800°C and a superficial gas velocity in an upward direction of from about 0.2 to about 0.8 m/s.

12. The process of claim 9, wherein the conversion of the at least a portion of the fluidizing medium to additional light olefins occurs at a WHSV of less than 5 hr^{-1}.

13. The process of claim 12, wherein the WHSV is less than 3 hr^{-1}.

14. The process of claim 9, wherein the conversion of the at least a portion of the fluidizing medium to additional light olefins occurs at a weight percent conversion of at least 10 percent.

15. The process of claim 14, wherein the conversion of the at least a portion of the fluidizing medium to additional light olefins occurs at a weight percent conversion of at least 30 percent.

16. The process of claim 1, wherein the first conditions comprise a temperature of from about 204°C to about 371°C and a superficial gas velocity of from about 0.11 to about 15 m/s.

17. The process of claim 1, wherein the process further comprises the steps of:
(g) directing a first portion of the molecular sieve catalyst composition to a catalyst regenerator;
(h) heating the first portion in the presence of oxygen under third conditions effective to at least partially regenerate the first portion and form regenerated catalyst; and
(i) directing the regenerated catalyst to one or more of the disengaging zone, the standpipe, or to a standpipe entry zone.

18. The process of claim 17, wherein the process further comprises the step of:
(j) contacting the regenerated catalyst with the fluidizing medium under conditions effective to increase the selectivity of the regenerated catalyst to light olefins.

19. The process of claim 1, wherein the fluidizing medium further comprises steam.

20. The process of claim 1, wherein the molecular sieve catalyst composition comprises a molecular sieve selected from the group consisting of SAPO-5, SAPO-8, SAPO-11, SAPO-16, SAPO-17, SAPO-18, SAPO-20, SAPO-31, SAPO-34, SAPO-35, SAPO-36, SAPO-37, SAPO-40, SAPO-41, SAPO-42, SAPO-44, SAPO-47, SAPO-56, metal containing forms thereof, intergrown forms thereof, and mixtures thereof.

21. A process for producing light olefins, the process comprising the steps of:

(a) providing a reaction system comprising a fluidized reactor and a disengaging zone, and further comprising one or more of a stripping unit, a catalyst regenerator, a catalyst cooler, a standpipe, a standpipe entry zone, and a plurality of conduits for transporting a molecular sieve catalyst composition between these units;

(b) contacting an oxygenate with the molecular sieve catalyst composition in the fluidized reactor under first conditions effective to convert the oxygenate to light olefins;

(c) directing the molecular sieve catalyst composition and the light olefins to a disengaging zone;

(d) yielding the light olefins from the disengaging zone;

(e) directing the molecular sieve catalyst composition from the disengaging zone to a standpipe; and

(f) directing the molecular sieve catalyst composition from the standpipe to the fluidized reactor, wherein the molecular sieve catalyst composition contacts a fluidizing medium in one or more of the plurality of conduits under second conditions effective to transport the molecular sieve catalyst composition in a fluidized manner through the one or more of the plurality of conduits, and wherein the fluidizing medium is selected from one or more of methanol, dimethyl ether, C4+ olefins, C4+ hydrocarbons, acetaldehyde, acetone, butanone, acetic acid, one or more byproducts formed in step (b), or a mixture thereof.

22. The process of claim 21, wherein the fluidizing medium is selected from one or more of methanol, dimethyl ether, C4+ olefins, C4+ hydrocarbons, acetaldehyde, acetone, butanone, acetic acid, or a mixture thereof.

23. The process of claim 21, wherein the fluidizing medium comprises one or more byproducts formed in step (b).

24. The process of claim 23, wherein process further comprises the steps of:
(g) separating the byproducts from the light olefins; and
(h) directing the byproducts to the one or more of the plurality of conduits.

25. The process of claim 21, wherein the one or more of the plurality of conduits comprise a conduit in fluid communication between the disengaging zone and one or more of the stripping unit or the fluidized reactor.

26. The process of claim 21, wherein the one or more of the plurality of conduits comprise a conduit in fluid communication between the catalyst regenerator and one or more of the disengaging zone, the catalyst cooler, the standpipe entry zone, the standpipe or the fluidized reactor.

27. The process of claim 21, wherein the one or more of the plurality of conduits comprise a conduit in fluid communication between the catalyst cooler and one or more of the disengaging zone, the standpipe, the standpipe entry zone, or the fluidized reactor.

28. The process of claim 21, wherein a superficial gas velocity of from about 0.1 to about 1.0 meters/second is formed in the one or more of the plurality of conduits.

29. The process of claim 28, wherein the superficial gas velocity is from about 0.2 to about 0.8 meters/second.

30. The process of claim 21, wherein the second conditions are effective to convert at least a portion of the fluidizing medium to additional light olefins.

31. The process of claim 30, wherein the second conditions comprise a temperature of from about 350°C to about 1000°C and a superficial gas velocity in an upward direction of from about 0.1 to about 1.0 m/s.

32. The process of claim 31, wherein the second conditions comprise a temperature of from about 400°C to about 800°C and a superficial gas velocity in an upward direction of from about 0.2 to about 0.8 m/s.

33. The process of claim 30, wherein the second conditions comprise a WHSV of less than 5 hr^{-1}.

34. The process of claim 33, wherein the WHSV is less than 3 hr^{-1}.

35. The process of claim 30, wherein the conversion of the at least a portion of the fluidizing medium to additional light olefins occurs at a weight percent conversion of at least 10 percent.

36. The process of claim 35, wherein the conversion of the at least a portion of the fluidizing medium to additional light olefins occurs at a weight percent conversion of at least 30 percent.

37. The process of claim 21, wherein the first conditions comprise a temperature of from about 204°C to about 371°C and a superficial gas velocity of from about 0.11 to about 15 m/s.

38. The process of claim 21, wherein the process further comprises the steps of:

(g) directing a first portion of the molecular sieve catalyst composition to the catalyst regenerator;

(h) heating the first portion in the presence of oxygen under third conditions effective to at least partially regenerate the first portion and form regenerated catalyst; and

(i) directing the regenerated catalyst to one or more of the standpipe, the disengaging zone, the standpipe entry zone or to the one or more of the plurality of conduits.

39. The process of claim 37, wherein the process further comprises the step of:

(j) contacting the regenerated catalyst with the fluidizing medium under conditions effective to increase the selectivity of the regenerated catalyst for light olefins.

40. The process of claim 21, wherein the fluidizing medium further comprises steam.

41. The process of claim 21, wherein the molecular sieve catalyst composition comprises a molecular sieve selected from the group consisting of SAPO-5, SAPO-8, SAPO-11, SAPO-16, SAPO-17, SAPO-18, SAPO-20, SAPO-31, SAPO-34, SAPO-35, SAPO-36, SAPO-37, SAPO-40, SAPO-41, SAPO-42, SAPO-44, SAPO-47, SAPO-56, metal containing forms thereof, intergrown forms thereof, and mixtures thereof.

42. A process for forming light olefins, the process comprising the steps of:

(a) contacting an oxygenate with a first molecular sieve catalyst composition in a fluidized reactor under first conditions effective to convert the oxygenate to light olefins;

(b) directing the first molecular sieve catalyst composition and the light olefins to a disengaging zone;

(c) yielding the light olefins from the disengaging zone;

(d) directing the first molecular sieve catalyst composition from the disengaging zone to a standpipe;

(e) adding a second molecular sieve catalyst composition to one or more of the standpipe, the disengaging zone or an optional standpipe entry zone;

(f) contacting the second molecular sieve catalyst composition with a fluidizing medium under second conditions effective to increase the selectivity of the second molecular sieve catalyst composition for light olefins; and

(g) directing the first and second molecular sieve catalyst compositions in a fluidized manner from the standpipe back to the fluidized reactor.

43. The process of claim 42, wherein the second molecular sieve catalyst composition comprises regenerated catalyst.

44. The process of claim 42, wherein the second molecular sieve catalyst composition comprises fresh catalyst.

45. The process of claim 42, wherein the fluidizing medium is selected from one or more of methanol, dimethyl ether, C4+ olefins, C4+ hydrocarbons, acetaldehyde, acetone, butanone, acetic acid and mixtures thereof.

46. The process of claim 42, wherein the fluidizing medium is selected from one or more byproducts formed in step (a).

47. The process of claim 46, wherein the process further comprises the steps of:

(h) separating the byproducts from the light olefins; and

(i) directing the byproducts to one or more of the standpipe, the disengaging zone, or the optional standpipe entry zone.

48. The process of claim 42, wherein the fluidizing medium creates a superficial gas velocity in an upward direction within the standpipe.

49. The process of claim 48, wherein the first and second molecular sieve catalyst compositions are transported in a downward direction while in the standpipe.

50. The process of claim 48, wherein the superficial gas velocity is from about 0.1 to about 1.0 meters/second.

51. The process of claim 50, wherein the superficial gas velocity is from about 0.2 to about 0.8 meters/second.

52. The process of claim 42, wherein the fluidizing medium contacts the first molecular sieve catalyst composition in one or both of steps (f) and (g) under third conditions effective to convert at least a portion of the fluidizing medium to additional light olefins.

53. The process of claim 52, wherein the third conditions comprise a temperature of from about 350°C to about 1000°C and a superficial gas velocity in an upward direction of from about 0.1 to about 1.0 m/s.

54. The process of claim 53, wherein the third conditions comprise a temperature of from about 400°C to about 800°C and a superficial gas velocity in an upward direction of from about 0.2 to about 0.8 m/s.

55. The process of claim 52, wherein the conversion of the at least a portion of the fluidizing medium to additional light olefins occurs at a WHSV of less than 5 hr^{-1}.

56. The process of claim 55, wherein the WHSV is less than 3 hr^{-1}.

57. The process of claim 52, wherein the conversion of the at least a portion of the fluidizing medium to additional light olefins occurs at a weight percent conversion of at least 10 percent.

58. The process of claim 57, wherein the conversion of the at least a portion of the fluidizing medium to additional light olefins occurs at a weight percent conversion of at least 30 percent.

59. The process of claim 42, wherein the fluidizing medium contacts the second molecular sieve catalyst composition in one or both of steps (f) and (g) under third conditions effective to convert at least a portion of the fluidizing medium to additional light olefins.

60. The process of claim 59, wherein the third conditions comprise a temperature of from about 350°C to about 1000°C and a superficial gas velocity in an upward direction of from about 0.1 to about 1.0 m/s.

61. The process of claim 60, wherein the third conditions comprise a temperature of from about 400°C to about 800°C and a superficial gas velocity in an upward direction of from about 0.2 to about 1.0 m/s.

62. The process of claim 42, wherein the first conditions comprise a temperature of from about 204°C to about 371°C and a superficial gas velocity of from about 0.11 to about 15 m/s.

63. The process of claim 42, wherein the fluidizing medium further comprises steam.

64. The process of claim 42, wherein the first molecular sieve catalyst composition comprises a molecular sieve selected from the group consisting of SAPO-5, SAPO-8, SAPO-11, SAPO-16, SAPO-17, SAPO-18, SAPO-20, SAPO-31, SAPO-34, SAPO-35, SAPO-36, SAPO-37, SAPO-40, SAPO-41, SAPO-42, SAPO-44, SAPO-47, SAPO-56, metal containing forms thereof, intergrown forms thereof, and mixtures thereof.

65. The process of claim 42, wherein the second molecular sieve catalyst composition comprises a molecular sieve selected from the group consisting of SAPO-5, SAPO-8, SAPO-11, SAPO-16, SAPO-17, SAPO-18, SAPO-20, SAPO-31, SAPO-34, SAPO-35, SAPO-36, SAPO-37, SAPO-40, SAPO-41, SAPO-42, SAPO-44, SAPO-47, SAPO-56, metal containing forms thereof, intergrown forms thereof, and mixtures thereof.

66. The process of claim 42, wherein the first molecular sieve catalyst composition is at least partially deactivated in step (a) to form a coked catalyst, the process further comprising the step of:

(h) directing the coked catalyst from the disengaging zone to a catalyst regenerator; and

(i) heating the coked catalyst in the presence of oxygen under third conditions effective to at least partially regenerate the coked catalyst and form the second molecular sieve catalyst composition.

67. A process for producing light olefins, the process comprising the steps of:

(a) contacting an oxygenate with a molecular sieve catalyst composition in a fluidized reactor under first conditions effective to convert the oxygenate to the light olefins;

(b) directing the molecular sieve catalyst composition and the light olefins to a disengaging zone;

(c) yielding the light olefins from the disengaging zone;

(d) directing the molecular sieve catalyst composition from the disengaging zone to a standpipe entry zone;

(e) fluidizing the molecular sieve catalyst composition in the standpipe entry zone with a fluidizing medium, wherein the fluidizing medium is selected from one or more of methanol, dimethyl ether, C4+ olefins, C4+ hydrocarbons, acetaldehyde, acetone, butanone, acetic acid, byproducts formed in step (a) or a mixture thereof;

(f) directing the molecular sieve catalyst composition from the standpipe entry zone to a standpipe; and

(g) transporting the molecular sieve catalyst composition from the standpipe to the fluidized reactor.

68. The process of claim 67, wherein the fluidizing medium is selected from one or more of methanol, dimethyl ether, C4+ olefins, C4+ hydrocarbons, acetaldehyde, acetone, butanone, acetic acid, or a mixtures thereof.

69. The process of claim 67, wherein the fluidizing medium comprises one or more byproducts formed in step (a).

70. The process of claim 69, wherein the process further comprises the steps of:

(h) separating the byproducts from the light olefins; and

(i) directing the byproducts to the standpipe entry zone.

71. The process of claim 67, wherein the fluidizing medium contacts the molecular sieve catalyst composition in one or more of steps (e), (f) or (g) under second conditions effective to convert at least a portion of the fluidizing medium to additional light olefins.

72. The process of claim 71, wherein the second conditions comprise a temperature of from about 350°C to about 1000°C and a superficial gas velocity in an upward direction of from about 0.1 to about 1.0 m/s.

73. The process of claim 72, wherein the second conditions comprise a temperature of from about 400°C to about 800°C and a superficial gas velocity in an upward direction of from about 0.2 to about 0.8 m/s.

74. The process of claim 71, wherein the second conditions comprise a WHSV of less than 5 hr^{-1}.

75. The process of claim 74, wherein the WHSV is less than 3 hr^{-1}.

76. The process of claim 71, wherein the conversion of the at least a portion of the fluidizing medium to additional light olefins occurs at a weight percent conversion of at least 10 percent.

77. The process of claim 76, wherein the conversion of the at least a portion of the fluidizing medium to additional light olefins occurs at a weight percent conversion of at least 30 percent.

78. The process of claim 67, wherein the first conditions comprise a temperature of from about 204°C to about 371°C and a superficial gas velocity of from about 0.11 to about 15 m/s.

79. The process of claim 67, wherein the process further comprises the steps of:

(h) directing a first portion of the molecular sieve catalyst composition to a catalyst regenerator;

(i) heating the first portion in the presence of oxygen under third conditions effective to at least partially regenerate the first portion and form regenerated catalyst; and

(j) directing the regenerated catalyst to one or more of the disengaging zone, the standpipe entry zone or the standpipe.

80. The process of claim 79, wherein the process further comprises the step of:

(k) contacting the regenerated catalyst with the fluidizing medium under conditions effective to increase the selectivity of the regenerated catalyst for light olefins.

81. The process of claim 67, wherein the fluidizing medium further comprises steam.

82. The process of claim 67, wherein the molecular sieve catalyst composition comprises a molecular sieve selected from the group consisting of SAPO-5, SAPO-8, SAPO-11, SAPO-16, SAPO-17, SAPO-18, SAPO-20, SAPO-31, SAPO-34, SAPO-35, SAPO-36, SAPO-37, SAPO-40, SAPO-41, SAPO-42, SAPO-44, SAPO-47, SAPO-56, metal containing forms thereof, intergrown forms thereof, and mixtures thereof.